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Legal Responsibility in Old Age,

BASED ON RESEARCHES

INTO THE

RELATION OF AGE TO WORK.

BY

GEORGE M. BEARD, A. M., M. D.

MEMBER OF THE NEW YORK SOCIETY OF NEUROLOGY AND ELECTROLOGY, AND OF THE MEDICO-LEGAL SOCIETY OF NEW YORK; FELLOW OF THE NEW YORK ACADEMY OF MEDICINE; MEMBER OF THE NEW YORK COUNTY MEDICAL SOCIETY; OF THE NEW YORK MEDICO-HISTORICAL SOCIETY; PHYSICIAN TO DEMILT DISPENSARY, DEPARTMENT OF ELECTRO-THERAPEUTICS AND NERVOUS DISEASES, ETC.

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LEGAL RESPONSIBILITY IN OLD AGE,

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By GEORGE M. BEARD, A. M., M. D.

GENTLEMEN—I propose to occupy the hour that you give me to-night in discussing—so far as is possible in a single paper—the important subject of "Legal Responsibility in Old Age."

This subject has, I believe, never before been presented to this society, and nowhere, so far as I know, has it received the scientific and exhaustive consideration that is demanded by the need of our times, and never before has the method that I will introduce to-night been brought to bear upon it.

My theme naturally divides itself into three heads:

1. What is the average effect of old age on the mental faculties? In other words, what is the law of the relation of age to work?

2. To what extent is the average responsibility of men impaired by the change that the mental faculties undergo in old age?

3. How shall the effects of age on the mental faculties be best brought to the attention of our courts of justice?

To the answering of the first inquiry—the relation of age to work—I have devoted several years of research. The result of my investigations, if I am suffered to arrange them, will, in proper time, be published in a complete and elaborate volume, wherein all the important and practical relations of the subject will be discussed impartially and exhaustively. It will be possible for me, on this occasion, to do no more than state the general result of my investigations, and only so far as may be necessary to give a scientific basis for the study of the effect of old age on legal responsibility.

It is proper for me to state that the researches of which I am now to give a partial abstract, have been several times presented before the Long Island Historical Society, have been published in the *College Courant*, and, in a condensed form, several times republished abroad, and thus have been brought to the attention of an

audience which, though limited in number, is yet best of all capable of appreciating the force of fact and reasoning.

While the views presented are in the highest degree unpopular, no one has yet pointed out serious error in the calculations.

METHOD OF ASCERTAINING THE LAW OF THE RELATION OF AGE TO WORK.

It would be easy to ascertain the law of the relation of age to work by the mere expression of an opinion, and thousands of opinions have been expressed upon it. It would be comparatively easy to prepare a list, on the one hand, of great names who have done their best work in youth ; and, on the other hand, of those who have done their best work in old age; but partial statistics, prepared to form a theory, can never settle these questions—cannot satisfy the inquirer, nor relieve the doubter ; nor have any convincing power whatever; and the opinions formed upon them will live no longer than the time required in uttering them.

If physiology alone could solve these problems—if it were possible for the microscope to so reveal the complex mechanism of the brain, and if chemistry could so analyze its intricate and manifold constituents as to make it a human possibility to determine, from the brain itself, both the general and special functions of which it is capable, and the modifications which these functions undergo by age, by disease, and external conditions—then, by a sufficient number of post-mortem examinations, these hard questions could be scientifically answered ; but, unfortunately for these methods of investigation, physiology and pathology are but just born, and neither our children nor our children's children can expect to see them exact and complete sciencess, as we have no recognised mental dynamometer by which to measure the comparative cerebral force of the living and the dead. The true and only way by which the subject can be approached is by studying the history of human achievements and comparing the age at which has been done the best work of the world.*

REPUTATION AND ABILITY.

Reputation is, on the whole, an approximately correct, as it is the only test of ability of men who have long been before the world.

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* Mr. Proctor, in an essay on this subject, to which I shall presently refer in detail, has anticipated me in the publication of a thought which I had supposed was peculiarly my own. It is that one of the best *dynamometers* for testing the growth of the mind is found in our capacity for appreciating one of Shakespeare's plays. "As the mind grows its power of appreciating Shakespeare increases ; and the great advantage of this particular test is that the mind cannot overgrow it. It is like the standard by which the sergeant measures recruits, which will measure all heights, not failing even when giants are brought to be measured by it."

It is hardly necessary to say that in differentiating the various classes of merit we should aim to represent not the opinion of any one but the settled opinion of mankind. The number of illustrious names of history is by no means so great as is currently believed. As the visible stars of the firmament, which, at a glance, appear infinite in number, but, on careful estimate, are reduced to a few thousand, so the galaxy of genius, which appears interminable on a comprehensive estimate, presents but four or five hundred lights of immortal fame. Mr. Galton, in his "Hereditary Genius," states that there have not been more than four hundred great men in history. I should be inclined to make a more liberal estimate, and bring four hundred and fifty, or perhaps five hundred into the catalogue. I do not forget that Goethe has said that "fame is no sure test of merit, but only a probability of such." The converse of this statement, that obscurity is no sure evidence of demerit, but only a probability of such, would come more nearly to the truth. Brain force, like all other great forces—light, heat, and electricity—is evolved in enormous excess of the apparent and immediate need of the world, and but a fraction is ever directly and especially utilized. Only in rare instances is special or general talent so allied with influence, or favor, or fortune, or energy that commands circumstances, that it can develop its full functions. Wisely says Emerson, "Things are in the saddle and ride mankind." When, through circumstances, or in spite of circumstances, the power of any man becomes permanently felt in the world, we may be sure that it is a reality and not a sham ; we are not sure, however, but that near him live in permanent obscurity a thousand men who, through ill favor or ill health, shall keep their great forces forever in reserve. The stars we see in the sky are but mites compared with the infinite orbs that shall never be seen ; but no star is a delusion—each one means a world, the light of which very well corresponds to its size and distance from the earth and sun. In the great galaxy of history, sham reputations go out in darkness like the meteors that flame across the heavens ; but every abiding reputation—every name that shines along the ages—must have great deeds, and great thoughts to feed it.

The method by which I sought to learn the law of the relation of age to work was to study in detail the biographies of distinguished men and women of every age.

I have prepared a list embracing nearly all of the greatest names of history, whose lives are recorded in sufficient detail to be of value in such an investigation, and have noted the age at which they did

the original work by which they have gained their fame. I have noted the ages at which philosophers have founded and announced their systems ; at which divines and religious teachers have originated their creeds, and have been most effective as preachers ; at which statesmen have unfolded their highest acts of legislation, of diplomacy and reform ; at which men of science have made their greatest discoveries and written their best works ; at which generals and admirals have gained their greatest victories, and carried on their most successful campaigns ; at which lawyers have led the bar, and physicians made their explorations in medicine, and artists have painted their masterpieces ; at which musicians have composed and performed their most illustrious creations ; at which architects and engineers have planned and executed the greatest monuments to their memories ; at which actors and orators have been at the zenith of their power, and at which teachers and professors have led eras in the service of education. From these data, which, though not absolutely exhaustive, are sufficiently so for a final and convincing settlement of the questions involved, I have derived the period, the decade, and year of maximum productiveness, and the various grades between this and the period, the decade, and the years of the least productiveness.

I have not overlooked the difficulties, the complications, and the various forms of error involved in such an investigation, and have endeavored, so far as possible, to calculate and provide for them.

The lives of some great men are not sufficiently defined to differentiate the period, much less the decade or the year of their greatest productive force. Such lives are either rejected, or only the time of death and the time of first becoming famous are noted ; very many authors have never told the world when they thought out or even wrote their masterpieces, and the season of publication is the only date that we can employ. These classes of persons, it will be seen, tell in favor of old rather than of young men, and will make the year of maximum production later rather than earlier, and cannot, therefore, be objected to by those who may dislike my conclusions. In an investigation so wide, and in the arrangement of facts gathered from so many sources, there is room for many numerical errors in regard to the dates of births, of deaths, and of special performances. It is believed that these errors, though they may be numerous, are yet slight, and will, in the main, counterbalance each other.

In a number of instances the honors that have been accorded to distinguished men—as knighthoods, baronetcies, memberships of

learned societies, or of legislative bodies—have been noted, and inasmuch as public honors, especially those which depend on kings and queens, princes and politicians, come late, and are very far behind the true deserts, the dates represented by them will tell against young men rather than for them. For those who have died young, and have worked up to the year of their death, the date of their death has sometimes been regarded as sufficient. Great difficulty has been found in proving the dates of the labors of the great names of antiquity, and, therefore, many of them are necessarily excluded from consideration.

Finally, it should be remarked that the list has been prepared with absolute impartiality, and no name and no date has been included or omitted to prove any theory. The men who have done original or important work in advanced age, such as Dryden, Radetzky, Moltke, Thiers, De Foe, have all been noted, and are embraced in the average.

GENERAL RESULTS OF THE INVESTIGATION.

The golden	decade	is between	30	and	40.
The silver	"	"	40	"	50.
The brazen	"	"	20	"	30.
The iron	"	"	50	"	60.
The tin	"	"	60	"	70.
The wooden	"	"	70	"	80.

Seventy per cent. of the work of the world is done before 45, and eighty per cent. before 50. The golden decade represents about twenty-five per cent. more dates than the silver. The difference between the first and second half of the golden decade is but slight. The golden decade alone represents nearly one third of the work of the world.

The best period of fifteen years is between 30 and 45. The advantage of the brazen over the iron decade—of 20 and 30 over 50 and 60—is very striking, and will cause surprise.

There is considerably more work done between 35 and 40 than between 40 and 45.*

The average age of the great personages from whose lives the law is derived is not far from *sixty-six years*. A very large number of

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* Since this paper was written there has appeared an essay of very exceptional interest as well as of remarkable ability on "The *Growth and Decay of Mind*," based in part on these researches of mine, and has attracted wide attention. It is from the pen of the eminent astronomer Richard A. Proctor. The essay originally appeared in the *Cornhill Magazine*, for November, 1873, and was republished in *Littell's Living Age*, No. 1,538; and also in the *Popular Science Monthly*, for January, 1874. The citations which Mr. Proctor there makes were from a very condensed report of my lecture before the Long Island Historical Society, on "*Decline of the Moral Faculties in Old Age*." It will be seen that the qualifying considerations to which he refers have been in this paper considered by me in detail.

them lived to be over seventy. On the average the last *twenty* years in the lives of original geniuses are unproductive.

The broad fact, then, to which these statistics lead us is, that the brain follows the same line of growth, maturity and decay as the rest of the body ; that the nervous, muscular and osseous systems rise, remain and fall together, and that the received opinion that the mind, of which the brain is the organ, develops and matures later than the power of motion or of physical labor and endurance, is not sustained by the facts of history.

DISTINCTION BETWEEN ORIGINAL AND ROUTINE WORK.

In making these investigations the distinction between *original* and *routine* work must be rigidly maintained. The quantity of work done by the aged is greater than that done by the young; in quality the advantage is on the side of youth. Original work requires enthusiasm ; routine work experience. In society both forces are needed—one makes the world move, the other keeps it steady. That the best test of brain force is *original* work will be questioned by none.

Men are their best at the time when enthusiasm and experience are most evenly balanced. This period, on the average, is from 38 to 40. After this period the law is that experience increases but enthusiasm declines. The people unconsciously recognize this distinction between the work that demands enthusiasm and that which demands experience, for they prefer old doctors and lawyers, while in the clerical profession, where success depends on the ability to constantly originate and express thought, young men are the more popular, and old men, even of great ability, are shelved or neglected. In the editorial profession original work is demanded, and most of the editorials of our daily press are written by very young men. In the life of almost every old man there comes a point, sooner or later, when experience ceases to have any educating power.

EXCEPTIONS TO THE LAW.

To this general law, as to nearly all other general laws, there are many individual exceptions, which, however, are a part of the law, and help to raise the average. The most marked exceptions to the law are found in the realm of imagination ; some of the greatest poets, painters and sculptors, such as Dryden, Bryant, Richardson, Cowper, Young, De Foe, Titian, Christopher Wren and Michael Angelo, have done a part of their very best work in advanced life. The imagery both of Bacon and of Burke seemed to increase in richness as they grew older.

On the other hand, in the realm of reason, philosophic thought, invention and discovery, the exceptions are very rare. Nearly all the great systems of theology, metaphysics and philosophy are the result of work done between twenty and fifty. The exceptions are both ways, and there are some who, like Napoleon, reach their prime long before thirty-eight.

APPLICATION OF THE LAW TO ANIMALS AND PLANTS.

The same law applies to animals. Horses live to be about twenty-five, and are at their best from eight to fourteen ; this corresponds to the golden decade of man. Dogs live nine or ten years, and are best for the hunt between two and six. Plants also appear to be subject to the same law. Fruit bearing trees, so far as I can learn, are most prolific at a time of their average life corresponding pretty nearly to the golden and silver decade of man. Children born of parents one or both of whom are between twenty-five and forty, are, on the average, stronger and smarter than those born of parents one or both of whom are much younger or older than this. The same fact applies to the breeding of horses, dogs, and probably of other animals.

It should be noted also, that in women, the procreative function ceases between forty and fifty, just the time when the physical and mental powers begin to decline, as though nature had forseen this law and provided that the world should not be peopled by those whose powers had fallen from their maximum.*

EGG-LAYING CAPACITY OF THE HEN.

The law is very well illustrated by the egg-laying power of the hen. It has been estimated that in an average lifetime an average

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* In considering the age of the female sex, Dr. Beck says: "It is generally conceded that no female can be impregnated, in our own climate, *under* the age of *thirteen*, nor *above* that of fifty, provided she has been previously barren. This, however, is only to be taken as a general rule, subject to exceptions. The presence of menstruation, in every country, constitutes the state of puberty, and the irregularity of its occurrence is noticed by most practitioners. It is to be regretted, however, that so few have given the result of their observations. Out of 450 cases investigated at the Manchester Lying-in Hospital, in England, the following results were obtained:

The menstruation began in the eleventh year in	10	Sixteenth	76
		Seventeenth	57
Twelfth	19	Eighteenth	26
Thirteenth	53	Nineteenth	23
Fourteenth	85	Twentieth	4
Fifteenth	95		

Again, out of 10,000 pregnant females registered at the same hospital,—

436 were upwards of	40 years of age.	9 in their	50th year.
397 from	40 to 45 years of age.	1 in her	52d "
13 in their	47th year.	1 in her	53d "
8 in their	48th "	1 in her	60th "
6 in their	49th "		

Mr. Roberton also adds that, so far as he could ascertain, particularly in the three cases above fifty years of age, the catamenia continued up to the period of conception." See Beck's Med. Jurisp., chapter on "Pregnancy."

hen will lay from 500 to 700 eggs, thus distributed: first year, 16 to 20; second year, 100 to 120; third year, 120 to 135 (the golden period); fourth year, 100 to 113; fifth year, 60 to 80; sixth year, 50 to 60; seventh year, 35 to 40; eighth year, 15 to 20; ninth year, 1 to 10.

THE MORAL FACULTIES SUBJECT TO THE SAME LAW.

The generalization, broadly stated, is that in all organic beings there is a period when the productive power is greatest, and this is not late but early.

We can go a step further, and assuming—what nearly all cerebro-physiologists of recent times will admit—that the brain is the organ of all the mental faculties, submit the moral nature to the same investigation. It does not follow that all people suffer decline of the moral faculties in old age; with many their last days are their best days. Some, like Charles James Fox, the English orator, after a youth and manhood of dissipation, settle down to an old age of quiet and dignified virtue.

When a man declines in moral principles he does not necessarily become a horse thief—a loss of active moral enthusiasm is frequently all that is noticed.

There are three causes of moral decline in old age:

1. The over exercise through life of the lower at the expense of the higher nature. Thus it has long been observed and admitted that conscience becomes less sensitive, and that vanity, avarice and ambition, and a disposition to petulance and irritability increase with years. This is the physiological cause.

2. Disease of the brain, or of other parts of the body that react on the brain. The diseases to which the brain is liable are infinite. Strange results may follow from even slight injuries to the head, or mere molecular perturbations of the cerebral structure. Striking cases have come under my own observation—a kick from a horse has destroyed memory of numbers, of houses and locality; a bereavement has destroyed memory of names; millionaires, once liberal, in old age have grown absurdly penurious; hemorrhages in the brain, and various disorders of the cranial cavity have gradually or suddenly made the clever foolish, the patient petulant, the hopeful despondent; have caused men to change almost instantaneously their religious and political doctrines.

3. Intellectual decline. The intellect is the eye of conscience, and when that is blinded by disease or the decay of age, men can-

not distinguish the true path, even though they desire to do so. Intellectual decline sometimes has the reverse effect, and favors the development of a kind of negative morality, for positive vice requires intellectual force as much as positive virtue, and when the intellect declines the man is obliged to be virtuous.

The two last causes are pathological. The pathological conditions that are most peculiar to the brain of old age are hemorrhage from rupture of the cerebral arteries, thrombosis, sclerosis, meningitis, congestion, anemia, neurasthenia and softening. Death in the aged is more frequently a process than an event. A man may begin to die ten or fifteen years before the mortal coil is entirely shuffled off. Men die as trees die, slowly, and frequently at the top first.* As the moral and reasoning faculties are the highest, most complex and most delicate development of human nature, they are the first to show signs of cerebral disease ; when they begin to decay in advanced life we are generally safe in predicting that, if neglected, other faculties will, sooner or later, be impaired. When conscience is gone the constitution may soon follow.

In private life illustrations of this theme are numerous enough, but in a public discourse the lives of celebrities, living and dead, serve best to enforce these views.

The decline of the moral faculties in old age may be illustrated by studying the lives of the following historic characters : Demosthenes, Cicero, Sylla, Charles V., Louis XIV., Frederick of Prussia, Napoleon (prematurely old), Voltaire, Jeffries, Dr. Johnson, Cromwell, Burke, Sheridan, Pope, Newton, Ruskin, Carlyle, Dean Swift, Chateaubriand, Rosseau, Milton, Lord Bacon, Earl Russell, Marlborough, Daniel Webster and Horace Greeley.†

In some of these cases the decline was purely physiological, in others pathological ; in the majority it was a combination of both.

Very few decline in all the moral faculties. One becomes peevish, another avaricious, another misanthropic, another mean and tyrannical, another exacting and querulous, another sensual, another cold and cruelly conservative, another excessively vain

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* As the corrected proofs of this paper are passing through the press, there come tidings of the death of Agassis ; this event is the last act of a long tragedy. To his friends it is well known that Agassis began to die several years ago. His death can be hardly regarded as a loss to scientific research, for he long ago ceased to be productive. So far as he lives in the future of science it will be mainly for the *original* work that he did before he reached his *fortieth* year.. The intemperate manner of his opposition to the theory of evolution by which he was so rapidly winning favor among the thoughtless and ignorant, and so rapidly losing favor among the conscientious and scholarly, may find its partial, if not complete explanation in the exhausted condition of his brain.

† In the volume now in preparation I shall give in full detail the precise nature of the moral decline in most of these cases.

and ambitious, and others simply lose their moral enthusiasm, or their moral courage, or their capacity of resisting temptation and enduring disappointment.

In studying the decline of the moral faculties there is little chance for statistics, as in the study of intellectual decline, for morality is so relative a term, and has about it so much of indefiniteness, that it defies arithmetic.

The best average barometer of mental force is memory, in all its varieties, and that memory early begins to decline, all are willing to admit. But decline in memory in old age is only the advance guard of an invading army that sooner or later is to devastate the brain.*

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* The Medical and Surgical Reporter for July 12, 1873, contained a carefully written editorial article on these researches, in which the writer claimed that I had made a fatal error in not taking into account the tables of mortality; and further stated that the tendency of my theory was materialistic and melancholy. To that editorial I made the following reply, which was published in the Reporter for August 2, 1873. Inasmuch as it has a general application, and may forestall other objections, I republish the whole letter.

Eds. Med. and Surg. Reporter:

In your editorial of July 12, commenting on my researches into the relation of age to work, you say that the value of my statistics is impaired, if not destroyed, by the fact that I did not take into account the tables of mortality, and did not consider the well understood fact that the majority of persons living in this world are under forty years of age.

Now, if there is any question connected with these reasearches to which I have given more attention than any other, it is to this very question, *the average age of those who have done the original work of the world.*

In all cases where I study a life of a person, not living, I take the age at death. So far as I have gone in my investigations the average age of the great men of history, taking the names as they come, and including, of course, those who, like Byron, Raphael, Mozart, etc., die young, is *over sixty.*

I have published my researches on the longevity of brain workers so frequently that it seems hardly necessary to repeat them. They can be found in the old numbers of the *Hours at Home* and of the *College Courant*, of New Haven. I may say, further, that in connection with this treatise on age and work, and side by side with it, and, indeed, as a part of it, I have for years been preparing a work on Longevity, and that the researches for the two works are carried on together, and aid and supplement each other.

Still further, I may say that the conclusions which I announced in my very first articles on longevity—that brain workers, for various reasons, live longer than muscle workers, that clergymen live longer than any other great actively working class in modern society—which statements were ridiculed and disputed, as these statements in regard to age and work are now, have since been confirmed by a number of observers, and have been accepted by the Clergymen's Life Insurance Company of New York.

I speak of these facts to show that so far from neglecting, I have given special attention to the longevity of the original workers of the world, and that my conclusions, though utterly opposed to the once popular notions, have been in a manner accepted.

That the most important original work of the world has been done by a few hundred, or at least a few thousand men, no one who has given much thought to the subject will deny; and if the average age of these, at death, is over sixty—not far from sixty-five, as I have proved—and if the original work of *these men* was done *early*, and not late in life, then the demonstration of the law of the relation of age to work is complete. With the rest of the human race we have simply nothing to do. Their expectation of life, their average longevity, may be subjects of interest, but in this investigation we need to know only *the tables of mortality of the original workers whom we study.*

The statistics of Dr. Jarvis, a gentleman by the way, to whom I have been indebted during all my investigations on the subject of longevity, have no possible bearing on the question under discussion. I may state that a very common mistake of those who criticise new facts and generalizations, is to *assume* that their originators generalized without taking into account all sides of the question, and all the qualifying considerations. The subject of age and work I have endeavored to approach from every point of the compass. To one exception to the law that my opponents usually adduce, I can bring up five or ten. The general objection to which you refer, that the aged have less stimulus to originate work than the young, I have considered in elaborate detail, and in its various bearings. It is, I think, the most important objection that has been brought against my theory.

To the materialistic and sentimental objections that you array at the close of your article, there is, perhaps, no occasion for me to reply. The same objections have been brought under various forms, against every radical advance in thought, from the birth of science until now, and they will continue to be brought, under similar or different forms, so long as man shall attempt to think and science shall continue to advance on the earth.

ILLUSTRATIVE CASES.

Under this head I append a few biographical facts, which are taken at random from the collection of nearly one thousand names that I have analyzed. They are given merely to show the method of investigation. Elsewhere I have arranged all the names under their appropriate classes—as scientists, commanders, theologians, physicians, inventors—and have found that there was a great difference as to the time in which the different occupations did their original work. Almost all inventions and original discoveries are made by boys or young men ; so, also, journalists, preachers and explorers do their best work in youth or middle life ; while musical composers and men of letters have, in some striking instances, originated great things in advanced age. In medicine, nearly all the exploration, experiment, discovery and original work is done by young men between twenty-five and forty; the medical practice of the world is mainly in the hands of those between forty and eighty. In the practice of law, which is a science of precedents, original work is not expected ; judges and diplomats are usually old, but the most successful pleaders are usually the young and middle aged.

As a lad of 16, Lord Bacon began to think independently on great matters ; at 44, published his great work on "The Advancement of Learning ; at 36, published twelve of his Essays ; and at 60 collected the thoughts of his life in his "Organum." His old age was devoted to scientific investigation.

At the early age of 29, Descartes began to map out his system of philosophy, and at 41 began its publication, and at 54 he died.

Schelling, as a boy, studied philosophy, and at 24 was a brilliant and independent lecturer, and at 27 had published many important works ; at 28 was professor of philosophy and arts, and wrote his best works before 50.

Arguments against scientific facts or theories, drawn from their real or apparent tendencies, seem to be more appropriate for a political or a religious than for a scientific journal, to be more worthy of the 14th century than the 19th, and to be more suited to the longitude of Spain than of America. Scientific discoveries are simply the thoughts of the Creator revealed through His creatures, and if their tendencies are evil, the Creator and not the discoverer is responsible.

At the present time a number of thoughtful observers are investigating this subject, both in its scientific and practical relations. To these I may offer three suggestions :—

1. That they rigidly observe the distinction between *original* and routine work. It is the original, creative, pioneering work that tests brain power.

2. That they first collect their facts, and theorize afterwards.

3. That in all their biographical and historical reading this subject be kept constantly in view.

In closing this communication, I wish to express my appreciation of the courtesy and candor with which you have conducted the discussion.

GEORGE M. BEARD, M. D.

New York, 8 *West Thirty-seventh Street.*

Dryden, one of the greatest exceptions to the law, did his best work when comparatively old ; his "Absalom" was written at 50, and his "Alexander's Feast" when he was nearly 70.*

Dean Swift wrote his "Tale of the Tub" at 35, and his "Gulliver's Travels" at 59.

Ruskin wrote the first part of the principal work of his life, "Modern Painters," at 28, though it was not completed until seventeen years afterward, when he was 45. "Seven Lamps of Architecture" appeared at 30, and "Stones of Venice" at 33. None of his latter works have taken as deep a hold of the popular heart, and are so sure of being remembered by posterity as those which were composed before he was 35.

Thackeray, after an unsuccessful youth, wrote "Vanity Fair" at 36 and 37, and "Esmond," which he regarded as his best work, at 41. But though he matured so late, he was but 51 when he sadly remarked to a friend : "Dickens and myself have worked out our vein, and what is more, the people have found it out." The judgment of the literary world would now accord with that of Thackeray.

Charles Dickens wrote "Pickwick" at 25, "Oliver Twist" and "Nicholas Nickleby" before 27, "Christmas Chimes" at 31, "David Copperfield" at 38, and "Dombey and Son" at 35. Thus we see that nearly all his greatest works were written before he was 40 ; and it is amazing how little all the writings of the last twenty years of his life took hold of the popular heart, in comparison with "Pickwick" and "David Copperfield," and how little effect the most enormous advertising and the cumulative power of a great reputation really have to give a permanent popularity to writings that do not deserve it. If Dickens had died at 40 his claim to immortality would have been as great as now, and the world of letters would have been little, if any, the loser. The excessive methodical activity of his mature and advanced life could turn off works with fair rapidity ; but all his vast experience and all his earnest striving failed utterly to reach the standard of his reckless boyhood. His later works were more perfect, perhaps, judged by some canons, but the genius of "Pickwick" was not in them.

Emerson published the first series of his essays at 38, and the second at 41 ; and that these essays had been in his thoughts

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* Since writing the above I have observed the following in one of the essays of Montaigne, "God is favorable to those whom he makes to die by degrees ; it's the only benefit of old age, the last death will be less felt and painful—it will kill but half or quarter of a man."

for years is evident from his statement that from his boyhood he had desired to write an essay on "Compensation." "Representative Men" appeared at 46; "English Notes" at 53; "Conduct of Life" at 56, and "Society and Solitude" at 67. It is, I believe, the view of many of his warmest admirers that the cream of his thought is embraced in his earlier essays, which were written between 25 and 40, and that none of his subsequent writings are so sure of immortality as these. He reached his zenith at 40 and 45. Since that period close observers have seen a positive decline of his great powers, which, during the last five years, has been almost painful.

Colt was a boy of 21 when he invented the famous weapon that bears his name; and Goodyear began his experiments in rubber while a young man of 24, and made his first success at 38, and at 43 had brought his discovery to approximate perfection.

Eli Whitney invented the "cotton gin" at 27, and between 33 and 41 discovered and perfected his method of making firearms.

Fulton at 28 had begun to study steam navigation, and was 42 when he made his first success on the Hudson.

Deyesse, the inventor of the needle-gun at 42, had, after various experimenting, at 49 constructed his first breach-loader.

Wendell Phillips was but a boy when he made his first great speech in Faneuil Hall; he reached his zenith just before or during the earlier part of the war, and now has for six years been very perceptibly on the decline.

Benjamin Disraeli became famous as the author of "Vivian Grey" at 21; at 32 entered Parliament; at 30 wrote "Coningsby"; at 42 had overcome his diffidence and was famous as a great debater, and published "Lothair" at the advanced age of 65.

The name of Bichat is one of the greatest in science, and he died at 32.

Graefe, the greatest of opthalmologists, and one of the greatest men of history, was famous at 25; at 31 had a world-wide fame, and died at 42.

Pinel at 35 had made an important investigation in science; at 40 took charge of an insane asylum and introduced his humane method; at 46 he gained a prize for an essay on the subject, and at 47 was appointed to the Bicetre, where he introduced a great reform in the treatment of the insane.

Turner at 15 exhibited to the Royal Academy, at 27 was an academician—painted his best works, "the Middle Period," in the years between 39 and 45. The works of the last twenty years of his life are inferior

Handel at 19 was director of the opera at Hamburg ; at 20 composed his first opera ; at 35 was appointed manager of the Royal Theatre at London ; at 25 composed "Messiah," and at 66, "Jephtha," and in old age and blindness his intellect was clear, and his power of performance remarkable.

Luther early displayed eloquence, and at 20 began to study Aristotle ; at 29 was Doctor of Divinity, and when he would refuse it, it was said to him that "he must suffer himself to be dignified, for that God intended to bring about great things in the Church by his name ;" at 34 he opposed the "Indulgencies," and set up his ninety-five propositions ; at 37, he publicly burned the Pope's bull ; at 47 he had completed his great task.

Thomas Jefferson at 31 wrote a remarkable paper entitled "Summary View," and at 33 wrote the Declaration of Independence ; at 58 he was President, and delivered a remarkable inaugural. But, although he lived to the advanced age of 83, he stated that he desired to have inscribed on his tombstone "Author of the Declaration of Independence, and of the Statutes of Virginia and Religious Freedom," and both of these tasks he had completed at 35.

Von Moltke at between 66 and 70 directed the operation of the great war of Prussia against Austria and France.

Nelson at 39 was distinguished at the battle of St. Vincent, and was knighted and made Rear Admiral. At the age of 40 he had been actually and personally engaged with the enemy one hundred and twenty times, and had gained the "Battle of the Nile," and was 47 at Trafalgar, where he was killed in action.

It is a fact of very great interest that the experiment and speculations that have led to the pretty generally adopted theory of the correlation of forces were made by young men.

Rumford at 31 was a very successful administrator in Bavaria ; at 45 published the experiments on what he had been engaged, on heat, etc.

Grove at 31 set forth his views on the correlation of forces, and at 41 was Queen's counsel.

Harvey at 40 made the discovery of the circulation of blood, and made it public at 49.

Jenner at 21 began his investigation into the difference between cow-pox and small-pox. His attention was called to the subject by the remark of a country girl, who said in his hearing that she could not have the small-pox, because she had had the cow-pox. At 47 he had perfected his great discovery.

Morton, Wells and Simpson were all young when they made their experiments and discoveries in anesthesia.*

Although I have been the first to extensively investigate this subject of the relation of age to achievement, and to establish statistically the time of life at which men do their best work, and to show from this investigation that the prime of life and the golden decade are early and not late, in short to *make the scientific discovery of the law of the Relation of Age to Work*, and to point out its various practical applications, yet the general conclusion in these researches has been more or less anticipated by a number of illustrious thinkers.

Thus Goethe, whose rich and powerful brain saw farther into almost every subject than any of his contemporaries—soaring high on the wings of science and of song—in his matchless conversations over and over again sings the praises of youth. Says he to Eckermann : " Yes, yes, my good friend, we must be young to do great things." And in another place, speaking of government, he said with emphasis : " If I were a premier I would never place in the highest offices people who have risen gradually by mere birth and seniority, and who, in their old age, move on leisurely in their accustomed tracks ; for in this way but little talent is brought to light. I would have young men."

Luther is reported to have said that : " If a man is not handsome at twenty, strong at thirty, learned at forty and rich at fifty, he will never be handsome, strong, learned or rich in this world." In the light of these statistics this statement becomes a prophecy with a most remarkable fulfilment. Sterne says that " at sixty years of age the tenement gets fast out of repair, and the lodger, with anxiety, thinks of a discharge." Mr. Emerson, even in his excellent plea for old age, makes this admission : " We do not count our years until there is nothing else to count ;" and of literary inactivity in old age he says, with high wisdom : " We postpone our literary work until we have more experience and skill to write, and we one day discover that our literary talent was a youthful effervescence which we have now lost."

Schiller has expressed the same idea as his friend Goethe in the maxim : " Denn der Lebende hat Recht," " For he who lives is in the right." The French have a motto that must have been originated by some one who thought of these things, " Qui n'a

* I have ascertained by these researches that nearly all the greatest geniuses of the world were *precocious* in the line in which they subsequently became famous—some of them extraordinarily so ; still further, I have found that those who were very precocious, attained as great longevity as those in whom the precocity was less marked.

point de sens a trente ans, n'en aura jamais." "He who has no sense at thirty years of age will never have any."

Very recently Dr. Oliver Wendell Holmes, in an address at the commencement of Bellevue Hospital Medical College, used this language: "New ideas build their nests in young brains; revolutions are not made by men in spectacles, as I have heard it remarked; and the whisperings of new truths are not caught by those who begin to feel the need of an ear trumpet."

The late General Halleck, in his book on "Military Science and Art," has a very interesting chapter on the age of the generals of the world; in that he shows, by a powerful array of statistics, that, with a few exceptions, nearly all the successful campaigns of history have been fought by young men. The history of the campaigns of Napoleon illustrates this point most remarkably; his early successes were gained over old and worn out generals, on whom great hopes had been placed; but he was finally overthrown by the young and middle aged.

In our recent civil war, the North began with old generals, and failed ignominiously at nearly every point. The average age of the generals and admirals (including Farragut) who put the war through was between 35 and 39.

One of the most striking passages on this subject is the following from Montaigne's Essay on Age:

"For my part, I believe our souls are adult at twenty as much as they are ever likely to be, and as capable then as ever. A soul that has not by that time given evident earnest of its force and virtue will never after come to proof. Natural parts and excellences produce what they have fine and vigorous within that term or never:

'Si l'espine non picque quand nai,
A peur que picque jamais,'

as they say in Dauphiny. Of all the great human actions I ever heard or read of, of what sort soever, I have observed, both in former ages and our own, more performed before thirty than after, and oftentimes in the lives of the same men. May I not confidently instance in those of Hannibal and his great competitor Scipio? The better half of their lives they lived upon the glory they had acquired in their youth; great men after, 'tis true, in comparison of others, but by no means in comparison of themselves. As to myself, I am certain that since that age both my understanding and my constitution have rather decayed than improved, retired rather than advanced.* 'T s possible that with

* This confession is all the more remarkable from the fact that the immortal essays of Montaigne were not written until he had passed the golden decade.

those who make the best use of their knowledge and experience may grow up and increase with their years ; but the vivacity, quickness, steadiness and other qualities, more our own, of much greater importance and much more essential, languish and decay

> ' Ubi jam validis quassatum est viribus aevi
> Corpus, et obtusis ceciderunt veribus arbus,
> Claudicat ingenium, delirat lingua que mensque.'
>
> ' When once the body's shaken by time's rage,
> The blood and vigor ebbing into age,
> No more the mind it's former strength displays,
> But every strength and faculty decays.' "

OBJECTIONS AND QUALIFYING CONSIDERATIONS.

As briefly as possible I will consider some of the objections to these views that may be made by those whose attention is for the first time brought to this subject :

First—Why has the idea that the mind declines later than the body, and is most strong and active between forty and eighty, been so generally and without dispute accepted ?

The explanations that I have to offer are these :

1. The faculty of reverence has been made subordinate to the faculty of reason.

The excessive exercise of reverence is a survival of barbarism. It is a habit that has come down to us from dark and ignorant ages, and though very much modified by civilization, especially among the educated and thoughtful, is yet among the masses of society usually dominant, and sometimes dangerous. Reverence, like reason, is organic, and is as essential to a complete character. In the well trained mind it is the servant of reason. It discriminates in the objects of its veneration, and knows at least some of the grounds that call for its exercise ; it honors the aged, not because they were earlier born, but for a lifetime of accumulated character and labor. It venerates antiquity, not because it is antiquity, but because of the really great and good thoughts that it gave to the world. But with untrained minds—and these constitute the majority even in the most advanced civilization that the world has yet seen—reverence is the master and not the servant of reason, and is exercised blindly, disproportionately, and extravagantly. Ignorant of the fact that reason, like the muscular and osseous system, undergoes various changes and degeneration in advancing years, they reverence the aged simply because of their age, even when their lives have been passed in ignorance and

folly. Forgetting the beautiful thought of Bacon, that the so-called antiquity of the world is really its youth, they reverence the past because it is the past, even when it represents only superstition and crime.

2. Nearly all men of very distinguished reputation are in the decline of life, while reputation beyond the cliques especially interested in our labors, only come long after our labors are completed.

Permanent fame, even in this rapid age, is a plant of slow growth—first, the blade ; then, after a time, the ear ; then, after many years, the full corn in the ear. Single acts, however brilliant and important, rarely insure immortality. The heights of glory are not scaled at a bound, but only by long climbing, and many wearisome and painful steps.

In order that a man may become permanently famous it is necessary, first, that he originate thoughts and acts so superior to the average as to make him worthy of fame—for copyists and imitators never become permanently famous ; secondly, that these thoughts and acts shall be known and appreciated by those few of his peers who are specially interested in them ; and, thirdly, that the reputation that he has acquired among his peers shall have penetrated all the strata of society, from the philosopher to the school boy, and become common property of mankind. Not until one's name has passed the third stage can it be said to be truly illustrious. Even in these days of the telegraph and printing press, this third stage will not easily be reached in less than fifteen or twenty-five years after the acts have been performed that deserve fame.

In past ages the best fame was very largely posthumous, and it is sometimes the case even in the nineteenth century. The greater men are the longer it takes for their influence to pervade the multitude below, just as some of the fixed stars are so far above the earth that their light, in spite of its velocity, is many years in reaching us, and some, it may be believed, are never seen by mortal eyes until the stars themselves have passed away into eternal night.

The aged men whom we delight to honor, and whom we are proud to know, earned the right to our esteem by hard work in retirement and poverty, and in positions where they would not have been recognized on the street or mentioned in society. It may be said of nearly all famous men, as has been justly said of Humboldt, that he had the greatest reputation when he least deserved it.

And thus it is that all our reverence appears too late. Fame, like money, oftentimes comes when it is least deserved and least needed.

Nearly all the men mentioned in "Men of Our Times" biographies are over fifty years of age, and if the work "Eminent Living Americans" ever gets through the press, it will be found that the same facts will hold good even in this country—the paradise of young men.

Undue reverence for age is entirely consistent with outrageous neglect of and cruelty to the aged; and, conversely, tender care for the old is not inconsistent with great lack of reverence for age as such. Reverence for age has declined with civilization, while almost everywhere kindness toward the aged has increased. At the present time we must go among the savages to find age truly reverenced and influential; but the barbarian who never enters the presence of his father without bending his knee, will greedily eat that father when he has grown too feeble to resist, or will leave him alone in the forest to die.

As superstitious reverence for age diminishes, intelligent respect for youth increases. Under the Roman law, to be a son was to be a slave; even after adolescence and marriage the hand of the father might at any moment fall on the head of his child. The idea that children have feelings which parents are bound to respect is largely a modern and primarily an American idea, and even here had reached no important and general development until within the past quarter of a century. There is no country in the world where age is so little reverenced and youth so much respected as the United States, and there is no country where both youth and age are treated with greater tenderness, delicacy and consideration.

3. The false teachings of works of art. It is a fact which no one will question, that of the millions of sculptures, busts, portraits, engravings, etc., of individuals and of assemblies, with which civilization abounds, the great majority represent old men. The explanation of this fact is not obscure. Individuals are most disposed to secure pictures of themselves in old age, as the time draws near when they must leave their friends, and when the battle for bread is over, and they have the leisure and means to devote to the luxuries. Then again, as a result of the indiscriminate deference to age of which I have spoken, men are not asked for their pictures until long after the honor is deserved. As with individuals, so very often with assemblies. The ignorance and superstition of artists—and it may be affirmed that no other intellectual class are

so ignorant outside of their department, and so superstitious, since most high art usually require native reverence for the old and the past—have represented nearly all great gatherings of distiuguished men as composed of old men. The ancient custom of powdering the hair has done much to increase and perpetuate this error.

Take, for example, any picture of the Continental Congress or the signers of the Declaration of Independence, and we shall find that the individual members nearly all appear to be old and venerable men, and yet we shall see that very many of the members of these bodies were young men between 25 and 35, and the average age of the fifty-six signers of the Declaration was between 40 and 45.

If the picture galleries represented their heroes at the age of their maximum of production, they would be filled with youthful if not boyish faces.

Still again, out of deference to another barbarian folly, that it takes great brains to rule nations and lead armies, and that the best expression of the human mind divine is found in physically governing or slaughtering men, all our histories, geographies, compends, books for children, and picture galleries, are filled with the faces of military and political heroes, to the exclusion of the truly royal and wise, who, by their thoughts and words, become the silent creators of kings and lead the leaders of armies.

Now, for special reasons which need not be explained in detail, men have not been supposed to be capable of governing others until their own brains have begun to degenerate, and the fires of youth have spent half their force.* The pictures of the statesmen of the world are, therefore, the picures of the age.

1. It has been stated that, in their opinion of the relation of age to work, men are influenced by their own age ; that as we advance in years we place the golden decade further and further forward. The answer to this objection is two-fold. (1.) Except in individual cases, it is not true that old people put the golden period at advanced life. The young reverence the aged more than the aged reverence themselves, and age appreciates youth better than youth appreciates itself. Since I began to write on this subject I have had varied opportunities to compare the opinions of the young and the old in regard to the question when the mental powers are

* Emerson, in his "Essay on Old Age," calls attention to the fact that the words expressing official bodies, as patres, senes, senate, seigneurs, and gerousia, all, by their derivation, signify old men.

at their maximum, and I have been surprised continually to find that while the young put the golden period late, the old put it in early or middle life. The old frequently tell me that my researches simply confirm their own observations and experience. The young are reverential, and look with awe upon their gray-haired seniors; they are hopeful, and aspire to great things in the very distant future. If the golden decade be near, as the law I have announced discloses, then they must gird up their loins in great haste, else they may find themselves beaten in the race of life. I have seen but two young men who at once gave full assent to the law of the relation of age to work as announced in this paper. One of these was R. S. Guernsey, Esq., member of the New York Bar, and a member of this society. Shortly after this paper was read I received from him the following letter, which by his permission I publish.* He informs me that he has been studying the subject for many years, and that his conclusions accord with mine. A

New York, *March 29th*, 1873.

* Dr. George M. Beard.

Dear Sir: I was much pleased with your address on the "Legal Responsibility in Old Age." The subject of the growth, maturity and decline of the mind has occupied my attention and observation for many years. I will mention three points particularly.

1. All the books on miscellaneous subjects bought for use (meaning those not absolutely required in a professional occupation) are purchased by men *under* forty or forty-five years of age, and books bought *before* that age show the principal subjects of a private library, however large it may become afterwards, whether necessary in professional occupations or as a means of enjoyment and daily use.

2. Men *after* fifty years of age rarely ever *study* any new subject, generally relying solely on the stock of knowledge that they have on hand. *Lawyers* and *statesmen* are particularly subject to this rule, and are very conservative, and regard experience and precedents of greater importance the older they get. On this fact mainly depends the permanency of all governments. Political revolutions are supported by persons under forty, and I consider that a great danger to the stability of any government is the extension of the right to vote to all men over twenty-one years old. The men from twenty-one to thirty-five are more numerous than older men, and the former class are originators and enthusiastic, and fond of novelty, and must necessarily have but little experience, and do not regard it as of much importance. This leads older demagogues to seek popular favor, and thus get into power by favoring new schemes, and then the entire political power of a government can be held and controlled by a few unprincipled persons. * * * * * * *

3. From twenty-five to forty may be regarded as the seed time of life—that is, the time when knowledge (facts) is accumulated and *stored up for future use*. Men mostly mature (use these facts) after forty and up to fifty-five, and if the accumulation is large, up to the time of some disabling disease or death. From fifty to fifty-five may be regarded as the stationary period when life is at its flood.

Yours, etc., R. S. Guernsey.

Within the past few months two or three young men of ability and culture, have informed me that they have been converted to these views, through a careful study of the evidence, and are trying to shape their own lives accordingly; but the great majority of young men, for the reasons above given, shut their eyes both to the facts and the arguments. On the other hand, old men not a few—among whom are some of the ablest and most eminent scientists in the country—have given me by letter or in conversation their assent to all the leading doctrines of this paper. I have observed, however, that the old men accept these views because they were prepared for them by previous thought and experience. In case they previously held different views, they do not change, but as in all matters, adhere to their old belief, without any regard to the facts. The converts to this theory of the relation of age to work, must, as in the case of all new theories, right or wrong, come mainly from the ranks of the young. As compared with other radical and revolutionary theories, it has, when brought to the attention of the world, one advantage and one disadvantage. It has the advantage of finding a number of men—especially of the thoughtful, scientific and scholarly sort—whose general observation and personal experience in life have fully prepared them to accept it; it has the disadvantage that the young men, among whom the authors of new theories must usually look for their converts, are, for the reasons just given, indisposed to accept or even to investigate it.

If this theory shall follow the general law it will be at least fifteen and probably twenty five years before it is generally understood.

former instructor of mine—a broad-minded and liberally cultured man, a well known professor—once remarked to me: "You can hardly expect any one about thirty-eight or forty to accept your theory." The reason for this is that not one of ten thousand ambitious men who have reached their fortieth year have at all fulfilled their ideal; those who have failed hope to succeed, and those who have somewhat succeeded aspire to nobler success in the future. The harvest is past, the summer over, and they are neither as rich or famous as they hoped to become. It is not in ambitious human nature to be content with what we have been enabled to achieve up to the age of forty. Twice I have been told by men of ability, and culture, and achievement: "If your theory is true I ought to commit suicide." My reply in both cases was in substance this: The best of your original, pioneering, radical work is in all probability already accomplished. The chances are tens of thousands to one that you will originate less in the future than you have in the past; for, just as we know by statistics that a man at forty has a certain average expectation of life, so do we know that he has a certain average expectation of original work. There is a chance in many, many thousand that you will live to be a hundred years old; there is about the same chance that you will make some great discovery or invention, or conceive and execute some original production in art or literature. Fame and wealth may come to you far exceeding your wildest dreams; but they will be the result and the reward of the work you have already done, or are now doing. Happiness may augment with years, because of your better external condition; and yet the highest happiness is obtained through work itself more than through the reward of work. Earth has no joy like that which comes from the birth of a new thought in a young brain.

2. It may be said of this theory of the relation of age to work as Darwin says of his theory of development—that it should have nothing to do with our hopes or fears. Here, as everywhere, the question is, not what we want to be true, but what is true. It may be unpleasant to admit that we are near relatives of monkeys, but we know that we must be descended from sources in many respects little superior to monkeys. It may be disheartening to succumb to this theory, and feel that after forty our chances for originating great thoughts or deeds are but one in many thousand; but we know by observation that when a very old man does any very great thing the world wonders. In the kingdom of science the day for hopes and fears is over; the day for fact and induction is begun.

3. To the objection that the law I have given is derived from eminent names only and not from the average mind, the reply is very obvious. The ordinary mind originates nothing and cannot be of any service in indicating for us the time when the thoughts of the world were conceived. The average man everywhere is a fool. Over the surface of this world there roam large flocks of sheep, about one billion in number, with here and there a bell-wether to lead them. When Goethe, in his "Faust," says that "this world is one enormous fool" he is, from the standing point of original thought, guilty of no exaggeration. In the list of names from whence my averages are derived, however, are found some who are far from being the greatest names in history. The aim was to represent all grades of historic fame—the lowest as well as the highest. Some of the names selected are but little known, or their glory shines but in a narrow sphere.

General observation shows that the law thus established for different orders of genius applies to the common mind everywhere, so far as the common mind is capable of originating, or of doing anything that approaches originality.

Observation among the medium classes will, so far as it can go, confirm the statistics derived from the higher orders. The average mechanic, merchant, artisan and professional man everywhere does the best of his poineering work, by which he maintains his family and gleans a fortune before forty. All merchants tell me that if a man does not lay the foundation of his fortune before forty-five he will probably die poor. Routine work and accumulation may come later; but the original work and preparations that try the brain power are done early or never.

4. It may be objected that, as a matter of fact, and far more than would be consistent with the statistics here presented, men of ability in very advanced life, in their writings, speeches and conversation, manifest mental powers of a high order of originality long after the physical strength has severely declined.

In answer to this objection it may be said that thought, like money, is a possession, and accumulates by compound interest. When Emerson indites a rich and suggestive essay, or Beecher preaches an eloquent discourse, they do not, necessarily, originate anything at the time, but simply draw on their abundant stores, gathered during a long and active life. Boys at school talk wildly of extemporaneous speaking; but, in strict language, orators extemporize nothing; excepting occasional flashes of thought that

are struck forth by the surcharged brain under great excitement, extemporaneous speakers simply repeat automatically what they have learned long before.*

The conversation of old men of ability, before they have passed into the stage of imbecility, is usually richer and more instructive than the conversation of the young; for in conversation we simply distribute the treasures of memory, as a store hoarded during long years of thought and experience. Conversation is, therefore, justly regarded as the lightest form of intellectual labor, and grows easier as we grow older, because we have greater resources to draw from. He who thinks as he converses is a poor companion, as he who must earn his money before he spends any, is a poor man. When an aged millionaire makes a liberal donation it costs him nothing; he but gives out of abundance that has resulted by natural accumulation from the labors of his youth and middle life. When an old man utters great thoughts, it is not age, but youth that speaks through the lips of age; his ideas which, in their inception and birth, drew heavily on the productive powers of the brain, are refined, revolved, and disseminated almost without effort. Old women make the best nurses, and the aged are good educators and guardians, but as a rule, only youth and middle life can beget children. Everywhere it is the first step that costs. Business men have a just maxim that after a man has saved a thousand dollars, the road to wealth is easy. The activity of age is the result of the momentum acquired in youth and early manhood.

CHILDHOOD, YOUTH AND OLD AGE BUT IMITATORS.

The creative period of life, it will be observed, is limited to fifteen years, between twenty-four and forty. A considerable amount of work is done before twenty-four, and a vast amount is done after forty; but at neither period is it usually of the *original* or *creative* sort that best measures the mental forces. The work done before twenty and after forty is usually work of imitation or routine. In early youth we follow others; in old age we follow ourselves. Boys in school and college copy, commit, repeat, and but rarely think. Collegians who, in this country, graduate at the age of twenty-two or three, rarely give themselves to fresh research, and almost never make any invention or discovery; hence the barrenness of even the best prize essays and orations. Commencement orations are dull because the authors tell us nothing new; even

* Henry Ward Beecher, one of the very ablest of off-hand speakers, admits this in his recent lectures on preaching.

their language is copied, with slight variations, from the authors whom they have most read and studied. Only the most precocious minds create thoughts before twenty. It is believed that from twenty-five to thirty the majority of thinkers begin to develop new thoughts. From forty and upwards they develop perfect and repeat the conceptions of the period between twenty-five and forty; they copy themselves as in early youth they copied others.

THE ART OF WRITING MAY IMPROVE WITH AGE.

No art when once acquired is readily lost, even in advanced life; but on the contrary, most of the arts may be refined and developed in age. Most strikingly is this illustrated in painting and sculpture, in which realms, as we have seen, quite old men have succeeded. Similarly with the art of writing. I refer to the style, the dress, the use of words, the art of expressing thoughts, and not of *thinking*. Men who have done their best thinking before forty have done their best writing after that period. This would appear to have been the experience of Dr. Johnson, Edmund Burke, Rosseau and Voltaire. But the art of writing—the mere style of expressing thought—noble as it is, must and does, in the estimation of men, rank far below the art of thinking. It is thought, and not the language of thought, that best tests the creative faculties. In every form of art—painting, sculpture, architecture—it is the conception that tells, although conception needs execution to make it available. It is wise, therefore, for young philosophers to do their thinking while young and in middle life, and to delay the permanent and final publication of their thoughts until they have also perfected the inferior but not unimportant art of expression.

5. It may be claimed that the statistics I have gathered are insufficient, and that a wider induction is necessary to establish a law of the relation of age to work.

While I do not claim that my researches have exhausted every name of history, I do claim that they are thoroughly representative, embracing every branch and phase of original work from the earliest records until the present time. It would be difficult to find any great and widely known character in any age or country whose life is sufficiently known to be of value in an investigation of this kind, that is omitted from my list. The life of a thoroughly obscure person, or one known only in a very limited circle, does

not serve us as a means of illustration or argument in an investigation of this character. To the illustrious names of history I have added a number of distinguished living representatives. When the list is published, under its appropriate classification, it will be found to be as exhaustive as could be well desired. The dates on which I base my average, representing the thoughts and deeds of nearly one thousand of the best names of history, point to nearly every great or leading fact of civilization; they are landmarks of the progress of the human race from barbarism to civilization. If the thoughts and deeds represented by these statistics had never been, civilization would never have been. An induction so wide as to include the great and radical thoughts and acts by which man has been raised from the condition of savagery, and the time of life at which they were conceived and executed, is surely a sufficient basis from which to determine the law of the relation of age to work.

Again, it is true here, as in other and allied investigations, that, beyond a certain point statistics are of no value, except to confirm and illustrate. The general law of the relation of age to work may be made out from an analysis of the lives of two or three hundred names, taken at random but carefully studied by the principles I have indicated. Any one who will diligently study the lives of even one hundred of the great names of history, will arrive at results which will substantially confirm all that I have here claimed.

The same principle is seen in getting statistics of longevity of different occupations. The average length of life of any great class —say clergymen—is demonstrated by a truthful analysis of a few thousand cases. It has, indeed, been shown by Rev. Mr. Sherwood, of the Society for Promoting Life Insurance among Clergymen, that the result of ten thousand observations differ little, if at all, from the result of five thousand. I am continually enlarging the area of facts in the study of this subject of the law of the relation of age to work, but the added statistics do not materially alter in either direction the mean year of greatest productiveness, or the relative position of the decades as obtained from the study of the first two hundred and fifty or five hundred lives.

The lives of some individuals are typical illustrations of the law. I may mention as especially worthy of study in this regard the lives of Goethe, Humboldt, Wordsworth, Carlyle, Newton, and Liebig. A minute study of the intellectual history of these six men will illustrate the law of the relation of age to work, and many of the

special applications referred to in this paper, to a degree that will surprise those who have not before thought on this theme.*

There remains the two-fold consideration that young men have greater stimulus to exertion than old men, and that the old control nearly all the wealth and prestige of the world. And yet nine out of ten among the aged are poor and obscure, and all their lives have had all the stimulus that poverty and obscurity can give to perform original work, but these stimuli seem to be of service only to the young. The aged are oftentimes crushed by misfortunes that only stimulate youth to original and successful effort. The opportunities for original work among the aged afforded by their wealth and by the material assistance and coöperation and attention that are ensured them by their reputations and by the positions which they hold as professors, teachers or public officials are, as we have seen, but rarely improved, while the young make their discoveries amid poverty, neglect and insult, and without any of the encouragements of past successes to animate and inspire them.†

These researches have more than a scientific, they have a *practical* interest. They have important relations to psychology, to neurology, to biology, to medical, medico-legal and hygienic science, to history and government in all its departments, and to the every day life of every man. All of these relations I shall in due time consider in full detail.

On the basis of the above law of the relation of life to work we are prepared to intelligently discuss the second division of our theme.

To what extent is the average responsibility of men impaired by the change that mental faculties undergo in old age?

It is impossible, in the state of science that now obtains, to fix any mathematical limits for human responsibility. Responsibility is itself a vague term, and our means for determining the degree of it in any individual are more indefinite than the term itself. This fact so often brought up as a reproach to pathology, is rather an evidence that pathology belongs to the higher strata of science. It is only mean and material truths that are exact. All the nobler sciences—politics, morals, psychology—are unmathematical and ill-defined. The largest and most interesting departments of

* The name of John Stuart Mill may be added to this list.

† Mr. Proctor, in the able essay referred to, while quoting with substantial approval these conclusions of mine, presents this qualifying consideration: "But it must not be overlooked that it is precisely because of the original work done in earlier life, that a man as he grows older, is commonly prevented from accomplishing any great amount of original work. Nearly the whole of his time is necessarily occupied in maturing the work originated earlier." The reply to this consideration is suggested in the remarks made above.

literature, poetry, oratory, romance and philosophy, are bound by no arithmetical law—everywhere the sweetest and purest pleasures are the least precise.

The question of legal responsibility in old age comes up in the following cases:

1. Cases of crime committed by the aged.

2. Cases of wills that are disputed on the ground of senile incapacity.

3. When it is desired to fix the limit when important officials, as Judges and others, should be retired, and the age beyond which men should not be eligible to office.

4. Cases of contested priority in invention and discovery.

Cases of grave crime committed by the very aged are comparatively rare; for the crimes of the world that require physical, intellectual and moral courage, and skill, and persistence, are committed mostly by boys and very young men. The researches that I have made on this subject have shown that the golden decade of crime is between twenty and thirty. If some judicious, discriminating earthquake could swallow up all of our criminal classes between fifteen and forty we might leave our doors unlocked at night and reduce our police force to a minimum. The reasons why crimes are so largely monopolized by the young are manifold, and need not be here discussed.

Corruption in political and business life, and breaches of trust, are very common among the old, as every morning newspaper bears witness; but as these offences are not usually punished, and some of them are not even punishable by human law, it is perhaps neither polite nor proper to consider them as crimes. Offences that depend on the sexual passion are not infrequent among the aged; for it is a fact of interest that in the decline of life we sometimes return to the vices of youth. I recall without difficulty the names of several prominent clergymen who have been charged with sexual irregularities, and all of these were old men. Cases of wills contested on the ground of senile incapacity are sufficiently frequent, and are sometimes very complicated and annoying. The significance of the law of the relation of age to work, in its bearing on legal responsibility in cases of crime or contested wills is, that it demonstrates the *presumption* of more or less intellectual or moral decline in old age. This presumption must be considered certainly in all cases of extreme age, and it should be allowed due weight. Three facts must, however, be also considered:

1. That there are not a few who are exceptions to the law of the decline of the intellectual and moral nature, just as there are exceptions to the universally accepted law of the decline of the physical nature. There are men who in extreme age preserve their teeth sound, their hair unchanged, their complexion fresh, their appetite sharp and digestion strong and sure, and their repose sweet and refreshing, and who can walk and work to a degree that makes their children and grandchildren feel very humble; but these observed exceptions in no way invalidate the general law, which no one will dispute, that the physical powers reach their maximum between thirty and forty, and that the average man at seventy is less muscular and less capable of endurance than the average man at forty.

Just so there are men who, in extreme age, preserve their reason clear, their imagination rich and strong, their memory faithful, their conscience sensitive, their moral courage heroic, and their temper sweet and pure. There are those who sail into the harbor of old age freighted with treasures of virtue gathered during the long and perilous voyage of life. There are those whose boughs in the autumn of life hang heavy with all the fruits of the spirit, beneath which the world may find refreshment and shade. But these exceptions in no way invalidate the general law that men decline mentally, as they decline physically, in advanced life.

2. That very great mental decline and grave cerebral disease are yet consistent with average responsibility.

The brain may be saturated with disease, and yet the mind be clear enough to make its possessor responsible in some, if not in all directions. Men differ in their organic responsibility; even in the golden decade one healthy man may be far more responsible than another healthy man of the same age. Men must be compared with themselves at different periods of their lives, and also with others—with the average standard that exists among men, indefinite as it may be—in order to fix the degree of their responsibility.

It is right and proper to examine the larynx with the laryngoscope, the ear with the otoscope, the eye with the ophthalmoscope, and to test the electro-muscular contractility by electricity, the nervous sensibility by the electric brush, and the muscular strength by the dynamometer; but after we have exhausted all our methods of physical examination, and perchance have made clear our diagnosis of senile disease of the brain—sclerosis of some sort, it may

be, or hemorrhage, or congestion, or anemia merely—we have done a little, and but a little, towards answering this question, whether *the man is or is not responsible for all his actions.* Disease of the brain, of some form or other, is an everyday matter in both sexes and at all ages. Probably very few persons go through life carrying a nervous system at all times healthy. If a hundred octogenarians were taken at random, it may be doubtful whether one of the hundred would have a brain absolutely physiological. Disease of the brain is one thing; disease of the brain that seriously impairs responsibility is another and a very different thing.

My definition of insanity has been anticipated in the foregoing remarks : *It is a disease of the brain, unaccompanied by loss of consciousness, but of such a character as to seriously impair responsibility.*

3. That a man in the decline of old age may be irresponsible in one or two directions, while perfectly responsible in others.

Only in a minority of cases does a man go down at once, along the whole line of his being. The faculties frequently retreat as armies do, here and there, by regiments, or bands or companies—some standing their ground while others fall back—and not by a sudden and instantaneous rout of every individual. Thus a wearing out old man may be quite responsible in every direction except where money is concerned ; for it is a very humbling fact that the love of money is strongest when there is least need of it. The youth cares little for money, but much for what it will bring ; the old man cares little for what money will bring, but much for money. Just as our voyage is completed and we are entering the harbor we seek to lay in provisions as though the ocean, and not the shore, were before us.

Personal spite against individuals, relatives and others, may, and often does in old age, amount to a disease. A man may converse perfectly well, may write eloquently, may be a kind neighbor and friend, and yet may exhibit constantly a pique against some relative, out of which he cannot be reasoned, and on which he talks and acts after the manner of a madman. In cases of contested wills this possibility may be considered.

In those somewhat rare cases where corruptionists, bribers, and those who are guilty of a breach of trust, are brought to trial, the query may sometimes arise, how far the decline of the intellectual and moral faculties may account for their behavior, and how far such decline may modify their responsibility. One point that the Credit Mobilier investigation brought out with great

clearness was, that men who are naturally upright and true, may, in the decline of life, lose both their intellectual and moral sharpness to such a degree that they fall into errors which younger shrewder and more unscrupulous men would have avoided. The men whose characters suffered most by the investigation were comparatively old men, and two of them—Ames and Brooks—have since died, and of chronic diseases.

The very aged are liable to be deceived, and to have traps sprung on them by their unscrupulous subordinates or associates; for, as I have said, experience is a schoolmaster that can teach us only up to a certain point. Experience in business life teaches sharpness, shrewdness and caution, but the young lad just entering life is not half so easily deceived, defrauded and ruined as very old, wearing-out men who have spent long lives in the battles of business.

Each case must be studied by itself in the light of the law I have adduced, and the several principles that I have indicated. The methods by which these principles are to guide us I can best illustrate by citing two or three cases.

The case of Horace Greeley capitally illustrates my theme. There are evidences, varied and sufficient, that for several years before his death his brain was not in a physiological condition. In the last week of his life he became insane, and, as is so often the case in old men, he became, in matters where money was concerned, irresponsible. He, who all his life had cared nothing for money, in his old age, when disease had invaded his brain, cared for little else; and all this time, or most of it, he was capable of conversing intelligently, and of writing very good editorials. Making a will was precisely the work for which he was incapacitated. His second will was, therefore, disallowed. When he made his first will his brain was not equal to its best—was probably much below its maximum; but there were no evidences at that time of serious declination from the standard of average responsibility.

When an old man who has in his lifetime been benevolent and wealthy, becomes fearful of the poor-house, and begrudges the meat on his table and the clothes on his back, we have reason to suspect serious cerebral disorder that may incpacitate him from making a will. A case of this kind has recently been brought to my attention.

I once had under my observation an aged clergyman, who all his life had been almost fabulously mean and penurious, who

let no opportunity slip in any direction of exacting the pound of flesh. In his prime—in the golden and silver decades—he had been a preacher of great eloquence, and had exhibited high enthusiasm and true courage as a reformer. Between 70 and 80 he waxed worse and worse ; he became a nuisance ; lost his memory ; lost his wife, and married again under the most absurd circumstances ; was divorced, and again married under circumstances still more absurd ; displayed a morbid sexual appetite, and went to gross excesses ; lost his physical health, which had been provokingly good ; lost his piety, which had never wavered for a moment during all his iniquities ; and finally, to the infinite joy of all, lost his money through the treachery of his last wife, who, seeing that he had lost his shrewdness, befooled and deserted him.

This complicated case illustrates both the importance and the difficulties of my theme. Here is a strong, able, and, in some few respects, good man, originally avaricious and mean, gradually failing in old age, and going down and down, until he has become an imbecile. Responsibility has passed into irresponsibility. Clearly responsible ten years ago, clearly irresponsible now, where was the dividing line? Pathology, it has been said, is the shady side of physiology, and the line where one passes into the other can never be precisely drawn. When a man has passed into drivelling idiocy or helpless imbecility Macaulay's school boy can make the diagnosis ; but to tell just where idiocy or imbecility began may defy the ablest physiologist or pathologist. Of the midnight hour the child is conscious, and even the birds can divine that the darkness is deepening on the world ; but what physicist so keen as to tell the precise moment when the afternoon begins to pale into the early twilight?"

During all these years this clergyman has been making will after will. Which one is worth anything in the eye of reason or law? Three years ago I advised his friends that he was in many respects irresponsible. They treated him accordingly. He died an admitted imbecile.

A few years since I was attending professionally an old man who was suffering from an attack of hemiplegia of quite a severe character. A few months before his death he made a will, and I was one of the witnesses. The will was contested by some of the children on the ground of irresponsibility. I testified in regard to the case before the Surrogate, giving it as my opinion that the testator, at the time of making the will, was of sound and dis-

posing mind. His emotional nature was greatly disturbed, as is usually the case when there are clots in the brain, and in many respects his behavior was childish, but in all business matters his mind was abundantly clear, and his conversation on all topics coherent and intelligent. The attempt of the contestants utterly failed.

A striking example of the recuperative power of nature even in advanced age came under my observation during the past year. A medical gentleman, over seventy years of age was so injured while attempting to get on board of a horse car that he was attacked by symptoms of the disease known as chronic myelitis or posterior sclerosis, or locomotor ataxia. To the usual symptoms of this disease were added attacks of temporary aphasia with great emotional disturbances that made him unfit for the active duties of his profession. When the case came to trial for damages against the railroad company I testified, as an expert in nervous diseases, that his prospects for recovery were absolutely worthless, basing my opinion partly on the grave nature of the disease and partly on his advanced age. The same testimony was given by another expert in mental diseases, and also by a surgeon of large experience. The old gentleman was so nervous and debilitated that the strain of the trial told heavily upon him ; even while giving his testimony his appearance, owing to his loss of memory and to his emotional disturbances, created great pity. Under various treatment, however, he improved to a degree that has no parallel in my experience, and at the present time he is able to attend somewhat to business. There are yet sufficient evidences of spinal disease, but all the symptoms have wonderfully improved, and the mind is entirely restored.

Here is a case that seems to defy all law; an old man in the last decennium recuperates under one of the gravest diseases known to science and complicated by mental disorder, with a rapidity and positiveness that is rarely seen in the young. The treatment he received was nothing peculiar—electricity, both currents—ergot and nitrate of silver; but out of more than a hundred cases of the disease, I have never seen symptoms so grave improve so rapidly. I account for the improvement in this case partly by the recentness of the symptoms—they were only a few months standing—and partly by the fact of its traumatic origin—nervous diseases caused by concussion generally offering a better prognosis than the same diseases caused otherwise—and partly by the excellent constitution of the patient. The case certainly teaches us the fact of

the possibility of rapid recovery from severe mental as well as physical disease even at an age when most of us expect to die. Admitting that this patient was at one time irresponsible, in some directions he is fully responsible now, and the fact of his former state ought not to weigh very heavily against the validity of any will he should now make or any act that he may commit, unless there shall be unmistakable evidence of a relapse.

I may remark here that the faculty for business sometimes lingers in the brain long after the other faculties have fled forever. An old man may know well enough how to look out for his money when on almost any other important subject he is perfectly childish.

Of the third class of cases—where the time at which Judges and other officials should be retired, and the age beyond which men should not be eligible to office, I can here remark only briefly. It is quite clear, in view of the researches I have made, that it is almost as necessary to fix some definite age when Judges should retire beyond which they cannot serve, as some definite age before which they cannot enter on their duties. The aim should be to give to the State the best of its manhood—to save it from the inflictions of callow youth and decaying age. True enough, Judges require experience more than enthusiasm, and on the bench mature, well furnished, more than brilliant minds are needed; but in extreme age Judges may lose their intellectual keenness, and, withal, may acquire a loginess and love for routine that impede justice. I have been told that the decisions of very old Judges have been more frequently overruled than the decisions of younger men. Any limitation of age must now and then deprive the State of the services of some exceptions to the law—on the one hand of young men who are wiser before twenty-five than are the average after that age, and, on the other hand, of old men who project into advanced life the enthusiasm and the fervor of youth. But the State must not deal with exceptions, but with laws, and aim for the best average results. This State has fixed seventy as the time at which Judges must retire. A similar provision should be made for the Chief Justice of the United States and his associates, and a liberal salary should be assured them on retirement. We do not want too old more than too young men in the Presidential chair, or even in Congress. It is very true that the ordinary duties of the President make little demand on the highest order of brain power, but cases are liable to arise that may make it necessary even for a President to have a first class intellect.

Of the fourth class of cases, where the priority of inventions or

discoveries is contested, I have only time to remark that, when any man over sixty years of age claims to have made any great discovery, all the presumption is against him; for in the whole recorded history of the human race I can find no evidence that any great and radical discovery or invention has been conceived and perfected after the sixtieth year. In one case to which a friend has called my attention, this consideration was forcibly urged by an advocate on an important trial.

We now come to the third division of the subject: How shall the effects of old age on the mental faculties be best considered in our Courts of Justice?

The remarks that I am to make on this head will apply to the medico-legal treatment of insanity of every form, as well as to those forms that are most peculiar to advanced life.

The present system of hiring persons, who are supposed to be experts, on both sides, and asking them to testify before a jury of twelve men, who are expected to agree in their verdict, is, in its adaptation to the present age, the most unsatisfactory that human ignorance in its worst estate could ever have desired.

Let us look forward, say one thousand years, to the year 2873, and imagine a professor of medical jurisprudence in this city presenting to his students the history of criminal trials in New York, in 1873. His lecture would read somewhat in this way:

"I can best convey to your minds the method through which criminal trials when the plea of insanity was adduced, were conducted in those distant days, if I take the following from a newspaper report of the time. We can suppose it to be accurate, for it was subsequently published in a pamphlet containing the proceedings of the trial. A physician who was supposed to have seen cases of insanity, being called by the counsel for the prisoner, was thus interrogated. I do not give the answers to the questions, for the reason that they bear no special relation to the question, and give little light on the subject:

"You are a great man on the subject of insanity, are you not?

"What standard works have you written?

"What public positions do you hold?

"What is insanity?

"You have seen this man two or three times—you think he is insane, do you not?"

The style of cross-examination was somewhat different, and the manner in which the lawyer treated the witness was somewhat less respectful than has been the custom in our Courts during the past five hundred years:

"Well, young man, where were you born?

"Was your mother legitimate?

"Is the story true that you ran away with somebody's wife ?

"Well now, what is the difference between a crazy man and an insane man ?"

"Are you crazy or insane ?"

Then follows a strange discussion between the lawyer, the witness and the judge, on a vast variety of scientific and unscientific themes, which relate to everything except the responsibility of the criminal. The next day we find that the prosecution, by scouring the city, have found a physician who is an old rival of the first expert, since for thirty years or more they have been accustomed to steal patients from each other, and by the promise of a small sum, not stated in the report, they had secured his services to testify on the other side.

The jury disagreed—two being in favor of acquittal, two of conviction, and the remaining eight, after changing their vote several times, took an oath on their own account that they would never divulge what their latest verdict was."

Now, gentlemen, there is in this imaginary history more of truth than of burlesque.

The modifications of our system of criminal trials I would suggest are these:

1. Let a commission of say three or five psychological experts be appointed by the Governor. Let them be men who have given special attention to cerebro-pathology, and who have had practical experience in the study and treatment of diseases of the nervous system. Let them be not so young as not to have had experience, nor so old as to have outgrown the value of that experience. Let them be salaried liberally, and be in no way dependent on either side of the cases that come into Court. Let them examine into any case where a criminal or a testator is suspected of irresponsibility, and let them have ample time and means for making the investigation. Let them give the result of their studies of each case in the form of a majority and minority report, if necessary. If subjected to a cross-examination, let it not be until they have first presented a calm, cool written statement of the scientific bearings of the case. The objection that Governors would not make good appointments is, of course, worthy of consideration. No system can be perfect; but it is a matter of experience that judicial appointments made by Governors have, on the whole, given satisfaction.

2. Let the juries be reduced in number, and let a majority verdict be sufficient. The one great reason why juries in complicated cases so often disagree is, I think, to be found in the evolution of modern society, and in the wide diffusion of intelligence, by which every

man thinks differently on every subject from every other man. When the system of jury trial was inaugurated ideas had not differentiated as they have since ; for the habit of thinking for one's self, now so common to almost all classes, is peculiar to our modern civilization. In old times to see one man was to see all men—at least of the class to which he belonged. When you had learned his views on religion, politics, war or literature, you need go no farther—you had learned the views of the whole country. When twelve men of that stamp are brought on a jury they find it easy to agree, for they are only twelve times one. They had not sufficient intellect to form individual opinions on a criminal case, or any other subject. Now all is changed. Whereas formerly all thought just alike on matters of religion, it is now hard to find two intelligent men whose religious beliefs or unbeliefs are precisely alike, and the Unitarian denomination boasts that no member knows what the other believes. As with religion, so with every other subject—so with opinions on the merits of criminal cases. When juries disagree the press belabor them for their stupidity. Had they all been as stupid as represented they would have agreed, for nothing is so unanimous as ignorance. It is because of the intelligence of some of the number that juries so often disagree. And the evil will augment as the evolution of civilization goes on.

In England the juries, although they do badly enough, yet seem to agree better than in this country. I account for this by the fact there is less average intelligence in England. The juries in their ignorance agree to do precisely the wrong thing. Conversing on this subject with Dr. Maudsley, of London, a few years since, I asked him what they did in England with insane murderers. "Hang them systematically," was the reply. In this country we go to the other extreme, and either acquit responsible criminals or else disagree on the verdict.

A jury of experts would be very hard to find. Out of the 40,000 physicians in this country, more or less, there are, perhaps, one or two hundred whose opinion in delicate and difficult psychological cases would be of value in a court of justice. If a dozen of these could be gathered at one place it is doubtful whether they would ever agree, except before the plainest evidence. They would be more likely to disagree than an ordinary jury, because they would be more intelligent, more advanced in the study of cerebro-pathology, and would have far more individual ideas on the subject. I am justified in this assertion, from the fact that in quite clear and simple cases of nervous diseases—such, for example, as locomotor

ataxia—a dozen experts generally have a dozen opinions. I frequently see cases of not very obscure nervous diseases where the patient has consulted a large number of physicians who have given more or less attention to neurology, and every one has given a diagnosis more or less different.

If these things be done in the green tree, what shall be done in the dry.

To all this should be added the complications that would arise from professional jealousy, which would surely be a serious practical difficulty in the way of securing an agreement from a jury composed solely of experts.

A responsible commission thus appointed, as Judges were formerly appointed, by the Governor, would, like the Judges, be above reproach, and, holding office on good behavior, would ordinarily be as much removed from the temptation to sell themselves to the highest bidder.

Scientific men, hired by the day to appear as experts, frequently appear to great disadvantage—when testifying in the class of cases described in this paper—from simple inexperience. To be a good witness requires genius in that special direction, and much experience. One may be a great philosopher, orator, poet, statesman or scientist, and be a perfect fool on the witness stand. The abler the man the worse the witness oftentimes, and especially in matters of science. A scholarly, candid, thorough and modest scientist, who had rather be right than be victorious, and worships no divinity but the truth, and would rather die than be the means of injustice, appears at an enormous disadvantage in the presence of an unprincipled advocate, whose aim is to be victorious at the expense of right, who trembles in the presence of truth, and whose only fear is that justice may be done. On the witness stand a fool and a scoundrel may appear far wiser than a learned and honest man. When we add to this inexperience of scientific experts their oftentimes profound ignorance of the subject on which they are experts, and to this add the unscrupulousness of the lawyers and the ignorance of the Judges, who admit evidence that ought to be banished to outer darkness, we cease to wonder that lawyers so often say that they would prefer a dice box to a jury.

In conclusion, I may say that I am not unaware that this essay in the facts and views it presents, so to speak, takes up arms against the human race—that it attacks principles which are hoary

with years, and treasured as heirlooms in the hearts of men; that it seeks to undermine doctrines that are sweeter than life, dear as heaven, and in defence of which many have joyfully gone down to die. So far as these views are right, so far, of course, the world is wrong. The strength of the law of the relation of age to work consists in this—that the theory followed the facts, and not the facts the theory; the results of the investigation were as surprising to me as they will be to you.

If anything could cause me to doubt the soundness and verity of theseviews it would be their immediate acceptance; for the laws of the growth of ideas are as inexorable as are the laws of the growth of plants and animals—those which speedily mature speedily die. No man who is at all in a hurry ought ever to do any thinking for himself. Whatever of truth there may be in this theory of the relation of age to work is in harmony with the scientific spirit of our time, and must gradually take its place among the convictions of men. First of all, psychology will give it attention, then pathology and general medicine, then scientists and scholars in allied departments, and last of all, of course, law, always behind all other sciences, and filling up the rear in the slow march of the race. But whatever be the fate of this special theory, all of us will agree to this—that the relations of cerebro-pathology and criminal justice must be better in the future than they have been in the past. When politics and statesmanship fail us, the law of evolution comes to our rescue; for, from the foundation of the world, it must have been preordained that the conduct of criminal causes where science is involved, should rise with the needs of the ages, and that the science of criminal pathology should be developed side by side with the upheavals of nature, the multiplication of species, and the infinite march of the stars.

When we consider the stupendousness of the incapacity with which criminal trials, in this country especially, are now conducted, we may be tempted to despair; and yet it is, perhaps, not too great things to expect that some of the younger members of this society may live to see the dawning of that nobler day when lawyers and psychological experts, no longer enemies, shall admit their common ignorance and seek to supplement their mutual deficiencies; when the courts of criminal justice shall cease to be arenas in which rival physicians shall fight their personal battles; when something of the force that is now spent in trying the expert shall be spent in trying the prisoner at the bar; when scientific and scholarly witnesses shall receive the same deference that is

now accorded to convicted murderers; when there shall be different grades of punishment for different grades of responsibility;* when, on the one hand, men shall no longer be punished for hereditary disease, and on the other hand, the commission of a great crime shall not be regarded as a *prima facie* evidence of insanity; when, in short, scientific medicine shall be married to scientific law, and truth, and order, and justice, and humanity shall be the offspring.

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* This subject of different grades of punishment for different degrees of responsibility has since been discussed before this society by Mr. David Dudley Field, Mr. Simon Stern and others.